

PAiA 4720, 4720A trouble-shooting

When these come through here for service, the trouble is often the kit builders getting the transistors installed in the wrong direction. There are a couple of outlines on the board graphics for the transistors in this kit. One is a rectangle with three holes in a straight line and one end rounded (TO-??? I'm not sure of the case style here). The rounded end is the emitter and the holes are emitter, collector, and base ECB. The other is a circle with a 'flat' off to the side of one of three holes in a triangle (TO-62). It has the emitter marked by the 'flat' and the legs are EBC in a triangle, or for a TO-92 type with EBC straight across, the middle base lead extended forward to be the point tip of a triangle.

This PAiA Talk topic has a transistor chart showing these relationships:

<http://www.paia.com/talk/viewtopic.php?f=7&t=200>

Also, the manual for the 4720A may be viewed/downloaded here:

<http://www.paia.com/talk/viewtopic.php?f=6&t=191>

The module is designed to be powered at +and- 9V dc. Some on-board voltage references are at pin 5 of IC2 (Vr3) and the emitters of transistors Q9 and Q10, Vr1 and Vr2. Vr3 should be about 4-6 volts. The voltages on the emitters of Qs 9 and 10 follow the voltages from the Tri Sym and PitchRange trims R49 and R51. Substituting a 6800 for the specified 10k at R52 may be necessary to get the needed 4-6v Vr3.

The Range trim is adjusted to be 4.5Vpp at TP1, then the waves adjusted (tri, sine, pw).

Some 4720s were sent with 308 type op-amps. IC1 must be a 748 or 301 op-amp in order for the Zero trim to have an effect. The 308 was supposed to be an op-amp that didn't need the zero adjustment, but external conditions contributed to a need for it.

Also related. It isn't unusual for the 2M2 or 2.2M at R5 to need to be replaced with a 470k to get enough control from the Zero trim. To get them nearly perfect without listening, just jumper the control voltage input to ground (when calibrating always use the same cv input you anticipate using in pitch cv control patches, ie the center one, and, of course wait a minute or two for the parts to come to operating temp. before adjusting), and watch the voltage to the base of Q1. Adjust the Zero until the voltage just teeters at a significant dc change.

On 4720A there is an added R55 1k resistor between the tp1 point and it's connection with Q4. This may have been related to the change of the 4871 to the MU-10 ???